



Bio-sensors

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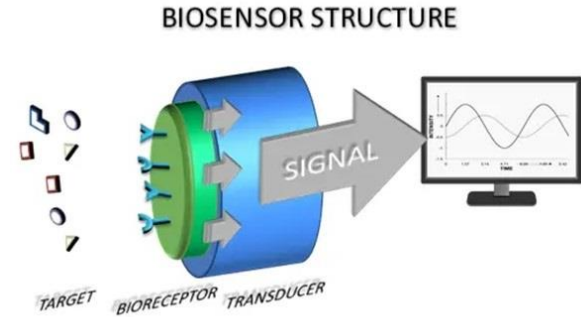
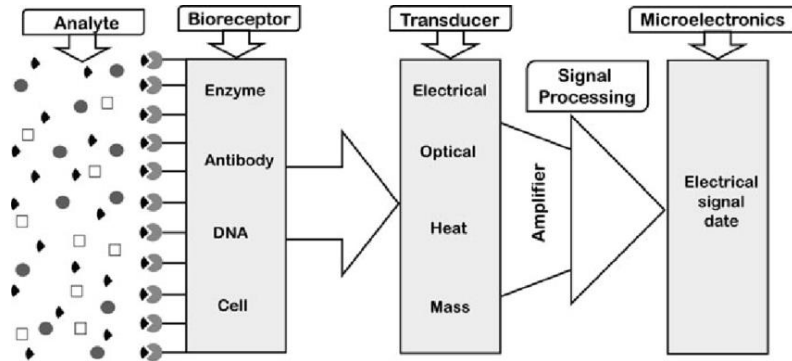


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Biosensors



Biosensors are analytical tools for the analysis of biomaterial samples to gain an understanding of their bio-composition, structure and function by converting a biological response into a measurable response. They are capable of detecting specific biological analyte and convert their presence and concentration to another signal which can easily be analyzed.



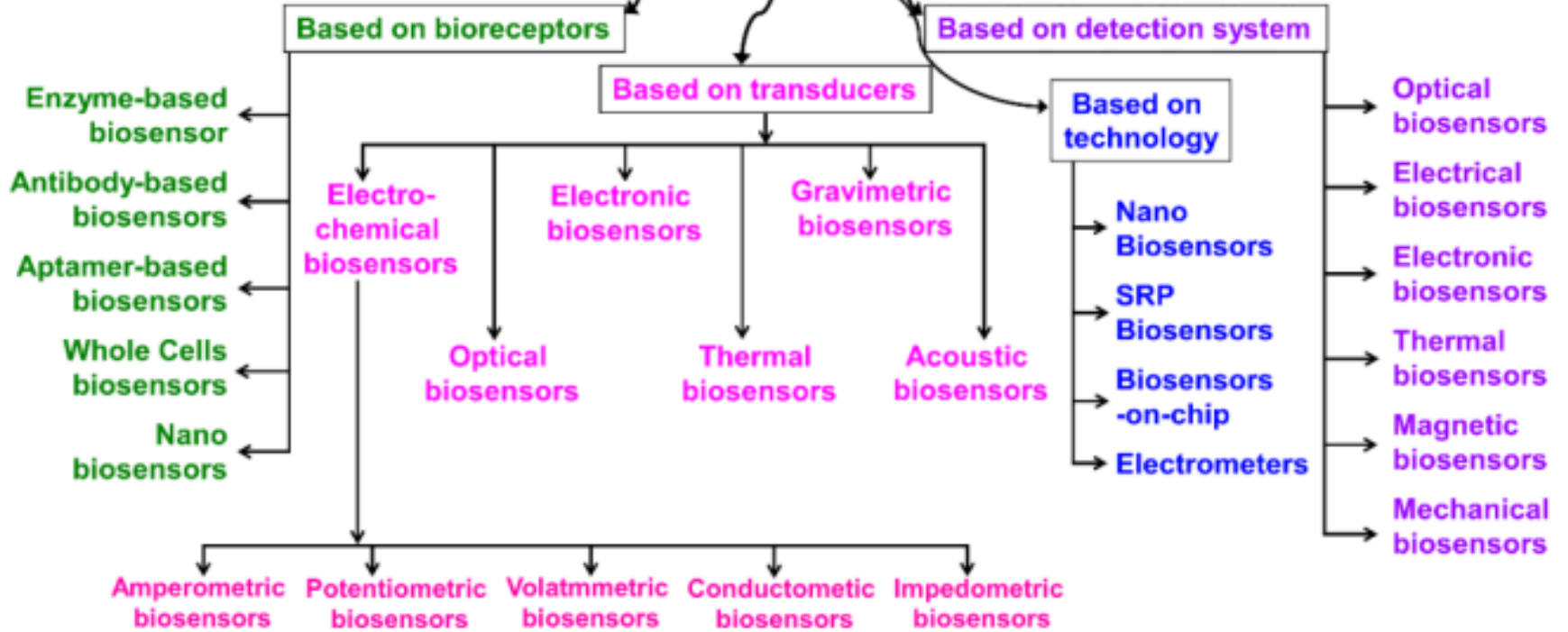
Working principle of biosensors



- Analyte diffuses from the solution to the surface of the biosensor.
- Analyte reacts specifically and efficiently with the biological component of the biosensor.
- This reaction changes the physiochemical properties of the transducer surface.
- This leads to a change in the optical/electronic properties of the transducer surface.
- The change in the optical/electronic properties is measured/ converted into electrical signal, which is detected.

BIOSENSORS

Classification



Enzyme based biosensors



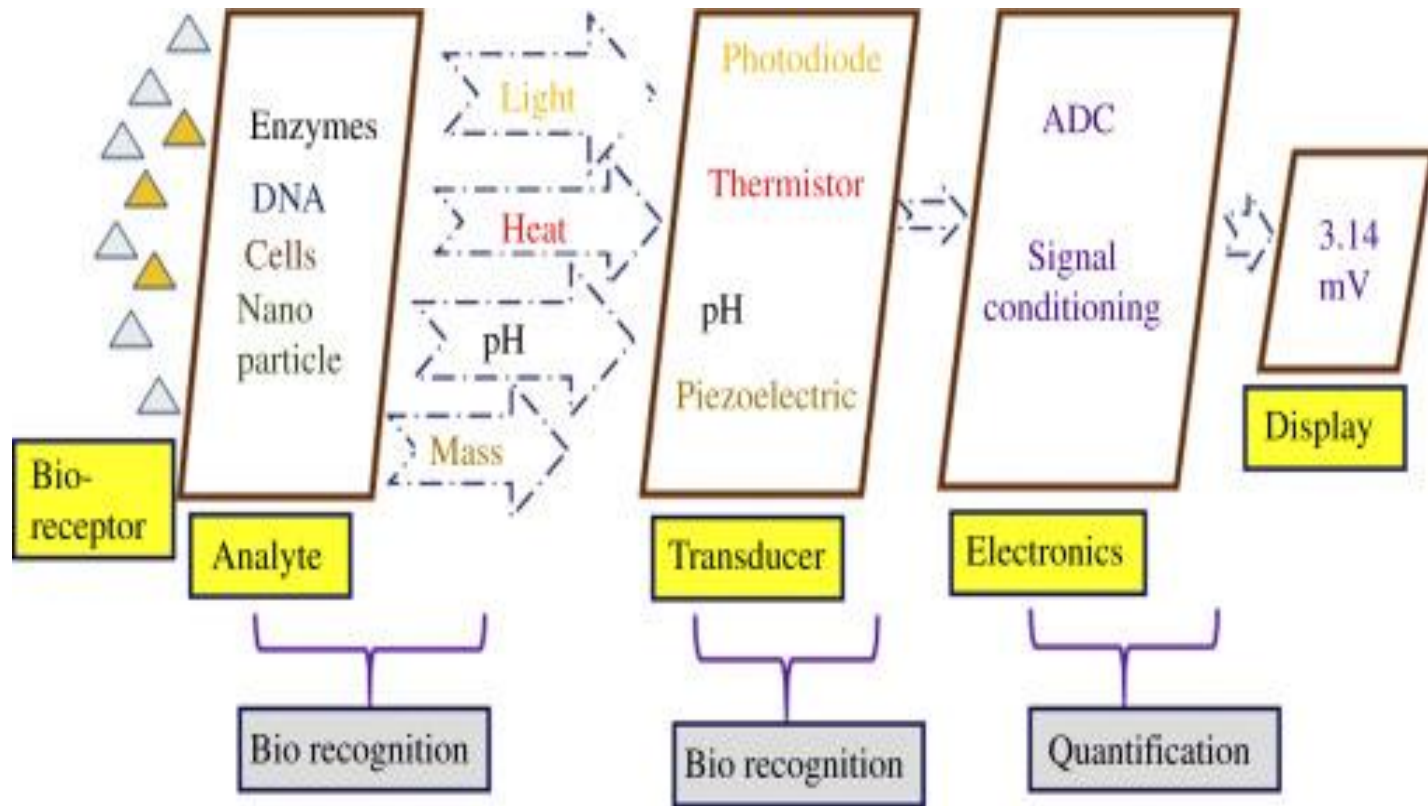
- The biological component used in enzyme-based biosensors is an enzyme.
- Enzymes are biological macromolecules with catalytic activity, high selectivity, and responsible for speeding up biochemical reactions under mild conditions.
- These macromolecules can attach to one particular molecule or analyte, but not others to ensure the analyte selectivity.
- Due to their high specificity, simplicity, and scalability, enzyme-based biosensors represent a fast, precise, and continuous monitoring of analyte



Working



- The biological material i.e. enzyme is immobilized on transducer.
- The analyte i.e. substrate binds to the enzyme to form a bound analyte.
- The analyte is converted into a product which could be associated with the release of heat, gas or hydrogen ions.
- The transducer then convert the product linked change into electrical signal which is amplified and measured.



Thanks!

